Go To Table Of Contents

M9 / M9D
M11 / M11D
Self-Contained Steam Sterilizer

Installation & Operation Guide

Important Information *Page 2*

Installation *Page 4*

Description *Page 7*

Component Overview *Page 8*

Controls & Indicators *Page 9*

Operation *Page 11*

Operator Maintenance *Page 24*

Calling For Service *Page 33*

Specifications *Page 33*

Limited Warranty *Page 42*

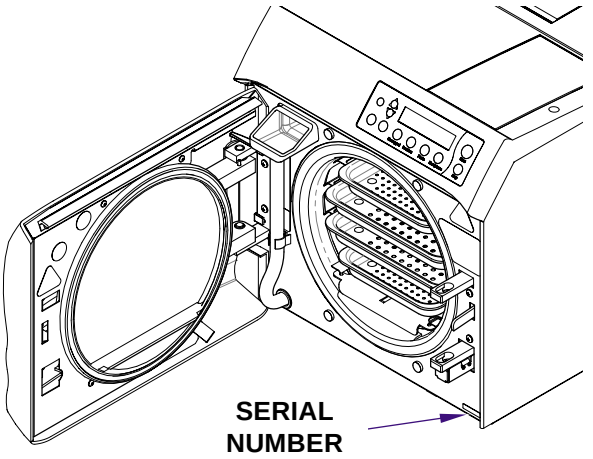
MIDMARK®

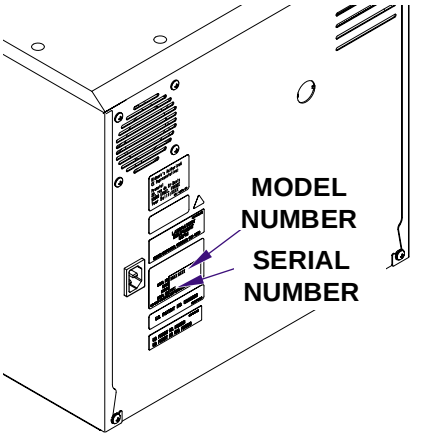
Go To Table Of Contents

Owner's Product Identification

(information that you will need to provide for servicing - key information is highlighted)

Model Number	***Serial Number***
Name of Owner / Facility / Department	***Date of Purchase***
Name of Authorized Midmark Dealer	Telephone # of Authorized Midmark Dealer
Address of Authorized Midmark Dealer	





MA616300i

CONTENTS

IMPORTANT INFORMATION 2
- Intended Use of Product 2
- Safety Instructions 2
- Explanation of Safety Symbols and Notes 2
- Transportation and Storage Conditions 3

INSTALLATION 4
- Location Requirements For Sterilizer 4
- Operating Environment Conditions 5
- Re-Location Requirements For Sterilizer 6
- Electrical Requirements 6

DESCRIPTION 7
- Safety Features 7

COMPONENTS OVERVIEW 8

CONTROLS & INDICATORS 9

OPERATION 11
- Recommended Steam Sterilization Monitoring Program 11
- Sterilizer Preparation Before Operation 12
- Cleaning Instruments 13
- Guidelines For Loading the M9 / M11 13
- Operating the Sterilizer 15
- Standard Cycle Parameters 16
- Standard Cycle Operation 17
- Programming Mode 20
- Unloading Hot Trays and Cassettes (Using Tray/Cassette Tool) 22
- List of Authorized Accessories 24

OPERATOR MAINTENANCE 24
- Tray Rack & Plate Removal / Installation 24
- Daily 25
- Weekly 25
- Monthly 26
- Non-Scheduled Maintenance 28
- Troubleshooting Guide 29
- Message Guide 30

CALLING FOR SERVICE 33

SPECIFICATIONS 33

PRINTER INSTALLATION AND OPERATION 36
- Installing the Printer 36
- Operating the Printer 37
- Inserting the Paper Roll 38
- About the Cartridge Ribbon 39
- Installing a New Cartridge Ribbon 39
- Removing the Paper Roll 40
- Power Up Message 40
- Printer Tape Description 40

LIMITED WARRANTY 42

IMPORTANT INFORMATION

Intended Use of Product

The M9/M11 Ultraclave or M9D/M11D Autoclave can be used in medical and dental offices, hospitals, clinics, nursing homes, laboratories, and other facilities to sterilize heat and moisture stable reusable items (including dental handpieces) that are compatible with steam sterilization. Refer to *Loading Trays* and *Standard Cycle Parameters* later in this manual for detailed information.

Safety Instructions

The primary concern of Midmark is that this equipment is operated and maintained with the safety of the patient and staff in mind. To assure safer and more reliable operation:

- Read and understand this manual before attempting to install or operate the sterilizer.
- Assure that appropriate personnel are informed on the contents of this manual; this is the responsibility of the purchaser.
- Assure that this manual is located near the sterilizer, or if possible, permanently affixed to the sterilizer.

Explanation of Safety Symbols and Notes

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in fatal or serious injury. DANGER symbol is limited to the most extreme situations.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

EQUIPMENT ALERT

Indicates an imminently or potentially hazardous situation which, if not avoided, will or may result in serious, moderate, or minor equipment damage.

NOTE
Amplifies an operating procedure, practice, or condition.

Transportation and Storage Conditions

EQUIPMENT ALERT
The water must be drained from the unit's reservoir before transporting or storing at 32°F (0°C) or below.

- Storage Temperature Range: ..... -22°F to 140°F (-30°C to +60°C)
- Relative Humidity..... 10% to 90% (non-condensing)

Consult operator's manual for important information

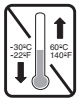
Proper shipping orientation

Fragile.

Keep dry.

Maximum stacking height of ***M11 palleted*** units

Maximum stacking height of ***M9 palleted*** units



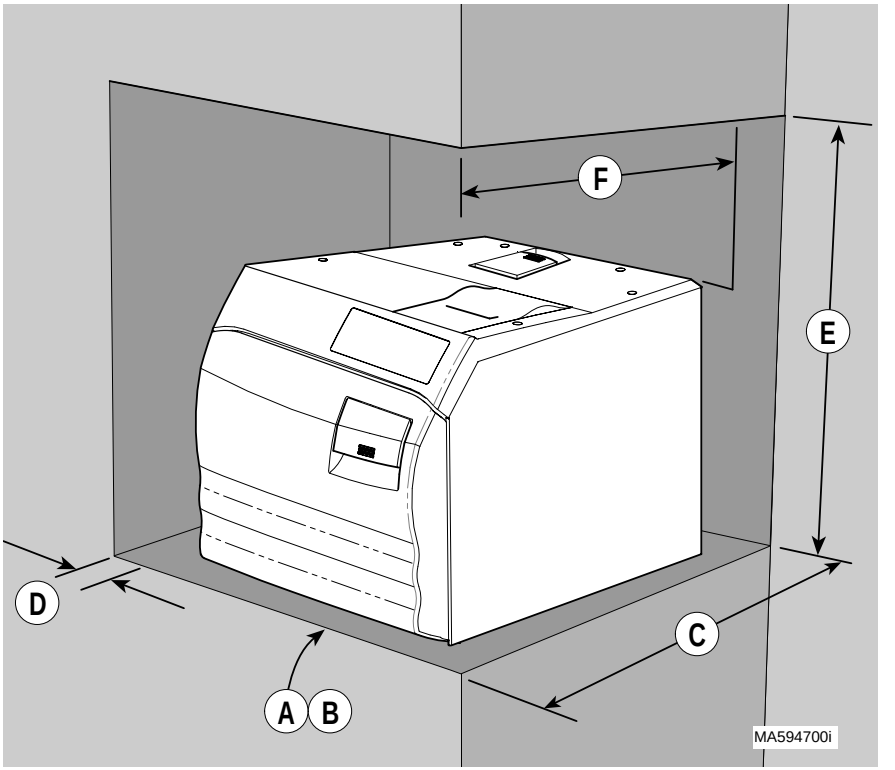
Minimum and maximum storage temperature for the unit.

INSTALLATION

Location Requirements For Sterilizer

DANGER
Do not operate this sterilizer in areas where flammable anesthetics are used or stored. An explosion could occur, causing fatal or serious injury.

Adherence to the following recommendations for location of the sterilizer will contribute to optimum performance of the unit:



Support Surface (A) - Sterilizer must be placed on a level surface to ensure that the chamber will fill correctly. Improper water level in the chamber could cause a sterilizer malfunction.

Support Surface Material (B) - Place sterilizer on a Formica, stainless steel, stone, or other water resistant material.

Support Surface Depth (C) - Support surface should be at least 21 in. (53.3 cm) (M11) or *18 in. (45.7 cm)(M9)* deep. Allow at least 2 in. (5.1 cm) clearance behind the sterilizer for air circulation.

Distance To Side Wall (D) - If sterilizer is located next to side walls, there should be no less than *2 in. (5.1 cm)* clearance between the side of the sterilizer and the wall.

Distance Above Sterilizer (E) - If sterilizer is to be located beneath wall cabinets or shelves, the underside of the cabinets or shelves should be at least *23 in. (58.4 cm)(M11)* or *22 in. (55.9 cm)(M9)* above the support surface to allow access to the printer for changing the printer paper roll.

Overhang (F) - If the sterilizer is to be located beneath an overhang, the underside of the overhang should project no further than *15 in. (38.1 cm)(M9)* or *18 in. (45.7 cm)(M11)* over the rear of the sterilizer.

Location On Support Surface - The front of the sterilizer should be located near the front of the support surface so water can be easily drained from the tube into a container.

Neighboring Materials and Equipment - If the sterilizer will be operated in continuous cycles, locate the sterilizer where steam will not damage materials or equipment in the surrounding area.

Operating Environment Conditions

EQUIPMENT ALERT

The unit should be allowed to reach room temperature before operating. Failure to do so could result in damage to the unit.

- Operating Environment
  Temperature Range: ..... 68°F to 104°F (20°C to 40°C)
- Normal Operating Altitude: ..... Below 9842 ft. (3000 m) above sea level.
- Device approved for Indoor Use Only.
- Device to be operated in a relatively dust free environment. An excessive relative humidity environment should be avoided. Less than 80% (non condensing) is recommended. (Pollution Degree 2, in accordance to IEC664)
- Device should be connected to a power source with over-voltage limits less than 1500 volts from mains to ground. (Installation Category II in accordance to IEC 664)

Re-Location Requirements For Sterilizer

1. Disconnect power cord from electrical outlet and allow sterilizer to cool.
2. Drain water from reservoir or do not tip sterilizer, allowing water to spill.

Electrical Requirements

WARNING

Use 104 - 127 VAC, 50/60 HZ alternating current only for 115 VAC rated models and 207 - 253 VAC, 50/60 HZ alternating current only for 230 VAC rated models. Failure to do so could result in electrical shock to personnel and will result in damage to sterilizer. Do not use this sterilizer in an explosive or oxygen-enriched atmosphere. Failure to do so could result in fatal or serious injury

EQUIPMENT ALERT

Unit should be allowed to reach room temperature before operating. Failure to do so could result in damage.

NOTE

Grounding reliability can only be achieved if this unit is connected to a matching three-pronged, grounded, isolated, correctly polarized receptacle.

Electromagnetic Interference

This Midmark Sterilizer is designed and built to minimize electromagnetic interference with other devices. However, if interference is noticed between another device and this Sterilizer, remove interfering device from the room and / or plug Sterilizer into an isolated circuit.

The three-pronged grounding plug on sterilizer power cord must be plugged into a matching three-pronged, grounded, dedicated, correctly polarized receptacle.

ELECTRICAL RATINGS

M9 / M11
M9D / M11D

115 VAC Unit	115 VAC, 50/60 Hz, 12 amp Dedicated Supply Circuit: 120 VAC, 50/60 Hz, 15 amp Maximum Power Consumption: 1425 Watts
230 VAC Unit	230 VAC, 50/60 Hz, 6.5 amp Dedicated Supply Circuit: 230 VAC, 50/60 Hz, 10 amp Maximum Power Consumption: 1500 Watts

DESCRIPTION

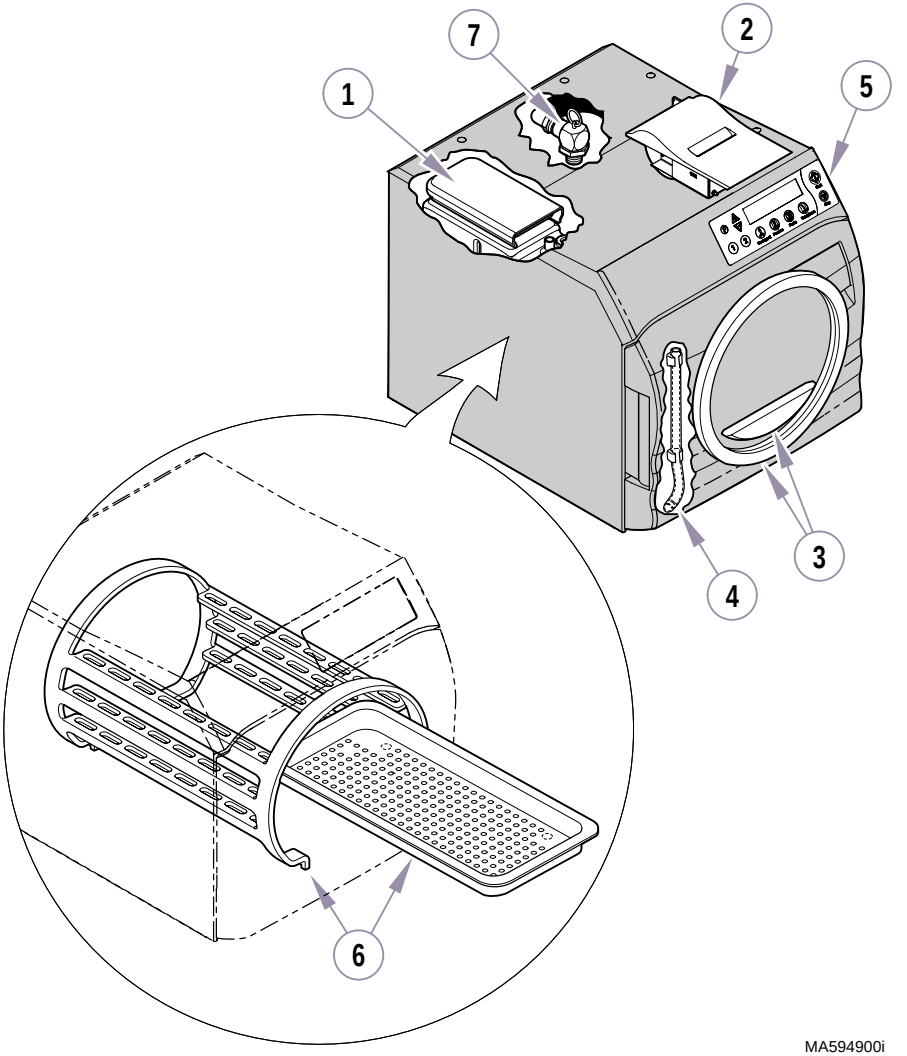
Safety Features

The M9 / M11 UltraClave™ or M9D / M11D Autoclave sterilizers have the following Safety Features . . .

- ***dry cycle door stop*** prevents door from opening fully if there is a slight residual pressure in chamber when door handle is operated.
  Door stop also retains door in a partially open position during drying cycle.
- ***door latched switch*** prevents operation until door is completely closed and latched. An audible "beep" sounds and message "**DOOR OPEN, CLOSE DOOR**" is displayed if door is not fully latched.
- ***monitors chamber temperature*** during a cycle to prevent an overheat condition. If chamber temperature exceeds its preset limit, power to the heaters is cut off and the cycle is aborted.
- ***pressure relief valve*** opens to reduce chamber pressure should chamber steam pressure exceed allowable limit. Released steam is directed out of bottom of unit's cabinet.
- ***fault detection circuit*** monitors all functions of sterilizer during a cycle. If a fault occurs during a cycle, the sterilizer monitoring circuitry stops the cycle, sounds an audible signal, and displays an appropriate error message.
- displays message "***ITEMS NOT STERILE***" if a sterilization cycle is interrupted by power loss, by the operator, or by a unit malfunction.

COMPONENTS OVERVIEW

Illustration below shows location of sterilizer's major components..



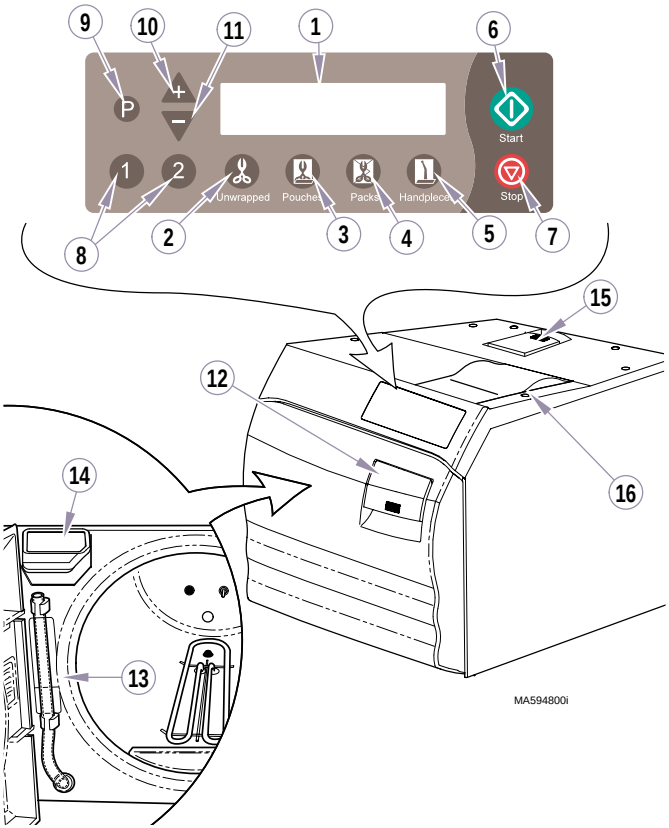
MA594900i

DESCRIPTION OF COMPONENTS

1. Reservoir Access Cover	5. Display
2. Printer (Optional)	6. Trays and Tray Rack
3. Door and Dam Gaskets	7. Pressure Relief Valve
4. Water Level Indicator / Reservoir Drain Tube	

CONTROLS & INDICATORS

The following illustrations show the location of sterilizer's controls and indicators. The chart describes their function.



Ref.	Control	Function
1	*Display*	*indicates cycle selected, cycle temperature and exposure time for the selected cycle. During the cycle, display shows messages describing status of cycle. When cycle time enters sterilization mode, remaining cycle time is displayed as well as temperature and pressure. Display also shows error message if a malfunction occurs. Refer to Message Guide for a detailed explanation for a message.*
2	***UNWRAPPED** button* Unwrapped	*a program cycle designed to process unwrapped instruments which runs at **270°F (132°C)** for **3:00 minutes** with a **30 minute drying cycle**.*

Ref.	Control	Function
3	***POUCHES*** *button* Pouches	*a program cycle designed to process instruments in combination paper / plastic sterilization pouches or wrapped instruments at* ***270°F (132°C)*** *for* ***5 minutes*** *with a* ***30 minute drying cycle****.*
4	***PACKS*** *button* Packs	*a program cycle designed to process packs of instruments at* ***250°F (121°C)*** *for* ***30 minutes*** *with a* ***30 minute drying cycle****.*
5	***HANDPIECES*** *button* Handpieces	*a program cycle for dental handpieces,which runs at* ***270°F (132°C)*** *for* ***6:00 minutes*** *with a* ***30 minute drying cycle***
6	***START*** *button* Start	***initiates*** *selected program or, when SELECT CYCLE is displayed, pressing START will activate heater for 10 minutes.*
7	***STOP*** *button* Stop	***terminates*** *selected program or function.*
8	***1*** *or* ***2*** *buttons* **NOTE** All material run in these cycles must be validated for sterilization by the user.	***Programmable cycle*** *buttons that allows an operator to create two different programmed cycles for special applications. Sterilization time and temperature, along with Drying time and Venting procedure can be adjusted or changed.*
9	***P*** *button*	***Programming mode*** *button that allows operator to change temperature, time, and/or venting procedure(s).Used in conjunction with buttons 1 or 2. (Refer to Programming Mode).*
10	**+** *button*	*Allows temperature or time to be* ***increased*** *or changes Vent to* ***Fast mode*** *when in location 1 or 2 and the P (programming) mode is activated.*
11	**-** *button*	*Allows temperature or time to be* ***decreased*** *or changes Vent to* ***Slow mode*** *when in location 1 or 2 and the P (programming) mode is activated.*
12	*Door Handle*	*for latching / opening door.*
13	*Water Level Indicator / Reservoir Drain Tube*	*shows amount of water in reservoir. Tube also used for drainage of reservoir into suitable container.*
14	*Fill opening*	*access for filling reservoir with distilled water.*
15	*Pressure Relief Valve Test Lever*	*allows operator to check pressure relief valve .*
16	*Printer (Optional)*	*The printer (optional equipment) can be used to provide a permanent record of time, temperature, and pressure during a cycle.*

OPERATION

DANGER

Do not use this sterilizer in an explosive or oxygen-rich atmosphere, or where flammable anesthetics are stored. To do so could result in an explosion or fire. Failure to do so could result in fatal or serious injury

Do not run the Sterilizer without the Tray Rack in place.

If the sterilizer malfunctions, immediately unplug sterilizer. If the sterilizer continues to malfunction, call for service; do not attempt to repair the sterilizer yourself.

EQUIPMENT ALERT

For optimal sterilizer performance, allow the sterilizer to reach room temperature before operating.

Also, Do not use toweling or packaging which may contain chlorine bleach residue. Doing so could result in trays and/or chamber rusting or discoloring. In extreme cases, the life of the chamber may be significantly shortened.

Recommended Steam Sterilization Monitoring Program

Physical monitors (temperature and pressure measuring devices) can help detect sterilizer malfunctions. The sterilizer control system aborts the cycle and displays a message if physical conditions go outside established limits.
The Printer Accessory should be used to create a record of each load's actual cycle time, temperature, and pressure.

NOTE

Process monitors *must be rated* for use with *Gravity Displacement Steam Sterilizers*

Process monitors (biological and chemical indicators) indicate if conditions in the sterilizing chamber were adequate to achieve sterilization. Process monitors cannot establish that a processed item is actually sterile.
If a process monitor indicates a sterilization failure, items in that load are considered non-sterile. Improper packaging, improper loading, and sterilizer malfunction can cause sterilization failures.
Determine the cause for all sterilization failures and take steps to remedy the cause before processing additional items in sterilizer. Follow the process monitor manufacturer's instructions for proper selection, storage, use, and interpretation for their devices.

Follow appropriate agency (state dental or medical board) sterilization monitoring guidelines for your office. Information can also be obtained from CDC, AAMI, OSAP, and ADA on monitoring programs and other sterilization issues.

Sterilizer Preparation Before Operation

EQUIPMENT ALERT

Check the serial number label (1) on back panel of sterilizer to verify voltage rating for the unit. Failure to connect sterilizer to an appropriate power supply could result in damage to unit.
Do not run the Sterilizer without the Tray Rack in place.

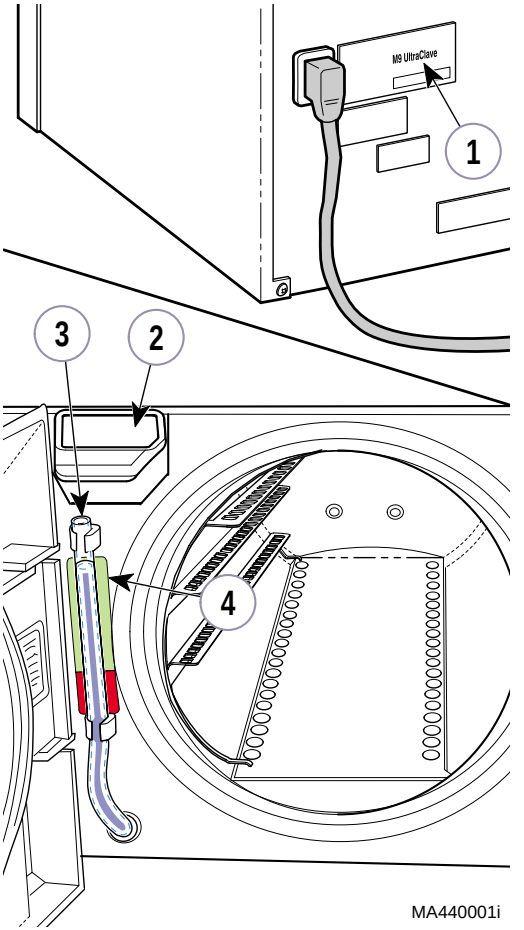
1. Plug in sterilizer power cord. Follow instructions. Display shows:

INITIALIZING SYSTEM

TOTAL CYCLES XXXX M9*, vX.XX

SELECT CYCLE

(*will display Model Number, M9, M9D, M11, or M11D).



EQUIPMENT ALERT

Use only distilled water. Chlorine found in normal tap water has a severe corrosive effect on the stainless steel chamber. Failure to use distilled or demineralized water may cause serious deterioration and premature failure of the stainless steel chamber which could result in serious injury.

2. Open door and pour distilled water into fill opening (2) until the water level found in the Water Level Indicator Tube (3) is at the top of the fill level label (4).

Cleaning Instruments

DANGER

Clean and dry instruments before putting them into sterilizer. Incomplete and improper cleaning of instruments will impede sterilization and will result in non-sterile instruments which could lead to personal or fatal injury.

- Follow item manufacturer's and OSHA recommendations for handling and cleaning items.
- As soon as possible after use, remove all material or residue accumulated during use.
- Rinse items thoroughly to complete removal of material and residue.
- Dry items completely.

Guidelines For Loading the M9 / M9D or M11 / M11D

- Refer to manufacturers' recommendations for loading their items.
- Refer to cassette manufacturers' recommendations for using their cassettes.
- Pouch or wrap items to preserve sterility after processing. Use only protective coverings designed and recommended for steam sterilization at 270°F (132°C).
- Do not wrap items too tightly. Sterilization will be compromised if an item is excessively wrapped.

WARNING

Do not overload the chamber. Adequate space is required around items in trays for steam circulation and drying. Failure to allow adequate space will compromise sterilization and drying. Do <u>not</u> run the Sterilizer without the Tray Rack in place.

- Place all containers so that the opening allows steam to enter, and air and condensate to drain from the container.
- Sterilize jointed items in an open position.

- Use only M9/M9D or M11/M11D trays in their appropriate sterilizer. Using other trays could restrict air and steam flow to items.
- Place unwrapped items on a towel or absorbent paper.
- Pouches may overlap, but handpieces and instruments must be single height loaded (not piled or stacked), to permit proper steam flow and penetration to the items.

Refer to below chart for maximum **M9/M9D** sterilization loads. If a load surpasses these limits, we recommend dividing the load and running multiple cycles. Listed below are the maximum recommended loads for each tray and total loads:

Load Type	Maximum Capacities		
	M9/M9D Large / Deep Tray	**M9/M9D Small Tray**	**M9/M9D Sterilizer Total**
Solid Items	42 instruments - 1089 grams (2.4 lbs.) ***or***	28 instruments - 726 grams (1.6 lbs.) ***or***	140 instruments - 3629 grams (8.0 lbs) ***or***
Handpieces	9 in rack **or**	9 in rack **or**	9 handpieces in rack and 75 instruments **or**
Packs **(†)**	1082 cu. cm up to 2.5 cm thick (66 cu. in. up to 1 in. thick)	787 cu. cm up to 2.5 cm thick (48 cu. in. up to 1 in. thick)	3736 cu.cm up to 2.5 cm thick (228 cu. in. up to 1 in. thick)

† *Packs to have a minimum of 1/4 in. (6.4 mm) space between each other and away from all sterilizer surfaces.*

Refer to below chart for maximum **M11/M11D** sterilization loads. If a load surpasses these limits, we recommend dividing the load and running multiple cycles. Listed below are the maximum recommended loads for each tray and total loads:

Load Type	Maximum Capacities		
	M11/M11D Large / Deep Tray	**M11/M11D Small Tray**	**M11/M11D Sterilizer Total**
Solid Items	45 instruments - 1225 grams (2.7 lbs.) ***or***	30 instruments - 816 grams (1.8 lbs.) ***or***	150 instruments - 4082 grams (9.0 lbs) ***or***
Handpieces	9 in rack ***or***	9 in rack ***or***	9 handpieces in rack and 75 instruments ***or***
Packs (†)	4425 cu. cm up to 5.0 cm thick (270 cu. in. up to 2 in. thick)	3195 cu. cm up to 5.0 cm thick (195 cu. in. up to 2 in. thick)	15240 cu. cm up to 5.0 cm thick (930 cu. in. up to 2 in. thick)

† *Packs to have a minimum of 1/4 in. (6.4 mm) space between each other and away from all sterilizer surfaces.*

Operating the Sterilizer

WARNING

Do not use this sterilizer in an explosive or oxygen-rich atmosphere, or where flammable anesthetics are stored. To do so could result in an explosion or fire.

Do not use this sterilizer for sterilizing volatile substances or for any purpose other than its intended design. Burns and toxic or explosive conditions could result.

Do not run the Sterilizer without the Tray Rack in place.

Clean and dry instruments before putting them into sterilizer. Incomplete and improper cleaning of instruments will impede sterilization and will result in non-sterile instruments which could lead to personal injury.

If sterilizer malfunctions, immediately unplug sterilizer. If sterilizer continues to malfunction, call for service; do not attempt to repair sterilizer yourself.

Do not force door handle at any time. Chamber pressure may cause door to open with extreme force. If door handle does not move freely, allow unit to cool and depressurize for 40 minutes before opening door. Failure to adhere could result in serious personal injury.

CAUTION

Programmable cycles 1 & 2 are provided for those applications requiring sterilization parameters different than the preset cycles. All material processed in these cycles must be validated by the user to ensure sterility of the processed load.

NOTE

Use sterility monitors with each sterilization load. If a sterilizing cycle is terminated prematurely, reprocess instruments to ensure sterility of the load.

Standard Cycle Parameters

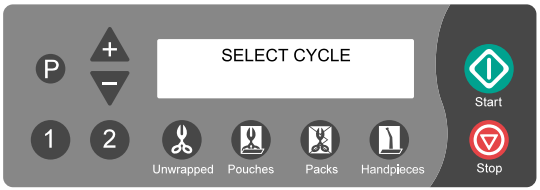
The following table lists the standard cycle parameters for the various cycles.

Standard Cycle Parameters

PROGRAM	TEMP / PRESSURE/ TIME (minimums)	ITEMS TO BE STERILIZED *(Always consult the item manufacturer's recommendations for sterilization.)*
Unwrapped	270°F (132°C) / 27.1 psi (186 kPa) Sterilize for 3 minutes 30 minute Dry*	• Instruments loose on a tray. • Open glass or metal canisters. • Tubing not used in surgical procedures. • Loose items manufacturers recommend for exposure at 270°F (132°C). *The sterility of unwrapped items is compromised on exposure to a non-sterile environment.*
Pouches	270°F (132°C) / 27.1 psi (186 kPa) Sterilize for 5 minutes 30 minute Dry*	• Pouched or loosely wrapped instruments. • Multiple layers of instruments separated by fabric. • Wrapped trays of loose instruments. • Tubing not used in surgical procedures. • Wrapped items manufacturers recommend for exposure at 270°F (132°C).
Packs	250°F (121°C) / 15 psi (104 kPa) Sterilize for 30 minutes 30 minute Dry*	• Textiles and surgical packs wrapped for sterilization. • Items, except liquids, manufacturers recommend for exposure at 250°F (121°C) for 30 minutes.
Handpieces	270°F (132°C) / 27.1 psi (186 kPa) Sterilize for 6 minutes 30 minute Dry*	• Dental handpieces ***NOTE*** *Verify acceptability of sterilization parameters with handpiece manufacturer.*
1 2	Programmable User Defined 230°F (110°C) to 275°F (135°C) 6 PSI (41 kPa) to 31 PSI (214 kPa) 3 min. to 90 min.	• Items appropriate for user's defined parameters. **CAUTION** All material run in these cycles must be validated by the user. These programmable functions allow you to set different time and temperature parameters. It is important to properly coordinate sterization temperature with cycle time. Permitted temperature range for proper sterilization is 250°- 275°F (121°- 135°C). Temperatures below 250°F (121°C) should only be used for disinfection.

*Dry time can be changed from 0 to 60 minutes. Refer to Standard Cycle Operation.

Standard Cycle Operation



Refer to following steps for a detailed description of operating procedures:

1. Display shows: **SELECT CYCLE**

2. ***Close and latch door***; sterilizer will not operate unless door is closed and latched properly.

EQUIPMENT ALERT
Using an incorrect sterilization program could result in non-sterile goods and may damage instruments. Consult instrument manufacturer for specific sterilization instructions.

NOTE
Pressing the START button when SELECT CYCLE is displayed, at beginning or end of a cycle, activates the heater for 10 minutes. The display flashes ADDITIONAL HEAT. This allows the Operator to preheat the chamber before starting an operation or to add additional time to the Dry mode at the end of an operation. Pressing STOP will end the ADDITIONAL HEAT time.

3. Select either **Unwrapped**, **Pouches**, **Packs**, or **Handpieces** sterilization cycle in accordance with the Standard Cycle Parameters table.

   - Press UNWRAPPED. Display shows the program's parameters:

UNWRAPPED
270°F, 3 MINUTES
and then
FAST VENT
30 MINUTE DRY

NOTE
On units using the metric display, ***°F*** will display as ***°C*** and ***PSI*** will display as ***KPA***.

Pressing P enables operator to change DRY time from 0 to 60 minutes in 1 minute increments on a pre-programmed cycle.

Pressing − decreases time. Pressing + increases time.

WARNING
STOP button may be pressed at any time to stop or interrupt a cycle. Goods must *not* be considered sterile if this occurs before Dry Cycle. Sterilizer will return to SELECT CYCLE mode.

Press START.

Sterilizer sounds a "beep" for two seconds to indicate cycle has started.

- ***Filling Chamber***:

  Display shows: **FILLING CHAMBER**

  Chamber automatically begins to fill to the correct level with water.

  When chamber is full, display shows **CHAMBER IS FULL**

- **Heat Up** portion of the cycle begins.

  Display shows: ***HEATING - UNWRAPPED XXX°F XX.X PSI***

  (can also be in metric values depending on set-up).

  Display changes as temperature and pressure in chamber changes.

- **Sterilizing** portion of cycle begins when correct temperature and pressure is reached.

  Display shows: ***STERILIZING MM:SS XXX°F XX.X PSI***

  Time remaining in cycle is counted down while current temperature and pressure in chamber is continuously updated.

- **Ready to Vent** is displayed when there is *10 seconds* remaining in Sterilization Cycle.

  Display shows: ***READY TO VENT XXX°F XX.X PSI***

- **Vent opens** when time runs out in Sterilizing mode.

  Display shows: ***FAST VENT XXX°F XX.X PSI***

  The display changes as temperature and pressure in chamber changes. Vent valve opens, venting steam and water from chamber back into reservoir.

WARNING
Keep clear when M9/M11 door is ready to open. Do not attempt to open M9D/M11D door until steam dissipates. Failure to do so could result in severe burns from steam being released.

- **Automatic Door Open** *(Pertains **only** to **M9/M11** UltraClave™)*
- **Door To Open**

  Display shows: ***DOOR TO OPEN*** / **XXX°F XX.X PSI**

  An Audible signal is emitted to indicate to Operator door is about to open. When pressure in chamber reaches zero, door actuates to partially open (Drying mode) position.

Manual Door Open *(Pertains **only** to **M9D/M11D** AutoClave)*

- **Open Door**

  Display shows (*top display line flashes*): ***OPEN DOOR TO DRY*** / ***STOP TO ABORT***

  An Audible signal is emitted when pressure inside chambers reaches zero to indicate to Operator to open door. The door should be opened to the first stop (drying mode) position.
  The audible signal will continue to repeat every minute until either the door is opened to the DRY (partially opened) position, or by pressing the STOP button, aborting the DRY cycle.

- **Drying**

  Display shows: ***DRYING*** / **MM:SS**

  Time of Dry Cycle is counted down.

NOTE

If desired, Drying Cycle can be aborted by pressing **STOP** button.

- **Dry Cycle Complete** when Drying time reaches 0:00.

  Display shows: ***DRY CYCLE*** / **COMPLETE**

  An audible signal is emitted for 10 seconds.

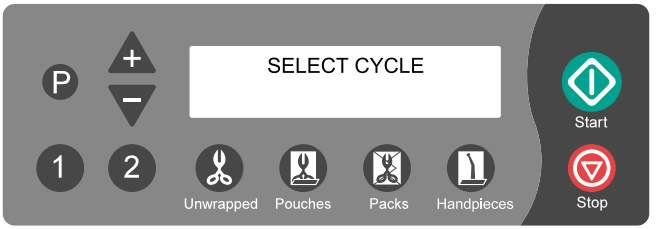
  After the STOP button is depressed display shows: **SELECT CYCLE**

WARNING

The processed load and inner surfaces will be hot. Avoid contact with hot surfaces. Failure to do so could result in serious burns

4. Remove processed load from chamber (See Unloading Hot Trays and Cassettes later in this manual).
5. The sterilizer may now be reloaded for another cycle.

Programming Mode



The following steps are for programming buttons 1 and/or 2 for applications that are not covered by standard cycle programs:

Displays: **SELECT CYCLE** Press 1

Displays: **PROGRAM 1 XXX°F, XX MINUTES** then **FAST VENT XXX MINUTE DRY** Press P

Displays: **STERILIZATION TEMP: XXX.X°F** then **<+> OR <-> TO ADJUST** then **<P> FOR NEXT <STOP> TO CANCEL**

Press + raises temperature 1°. Press − lowers temperature 1°.

Sterilization temperature can be adjusted from a *minimum of 230°F (110°C)* to a *maximum of 275°F (135°C).* Permitted temperature range for proper sterilization is 250°- 275°F (121°- 135°C).

CAUTION
Temperatures set below 250° F (121°C) should not be used for sterilization, unless otherwise required by the device manufacturer. Temperatures below 250° (121°C) are provided for disinfection only.

NOTE
If the STOP button is pressed anytime during the Programming Mode the settings entered will be aborted and revert back to the original settings before programming began.

then displays: **<P> FOR NEXT <STOP> TO CANCEL** Press P

Displays: **STERILIZATION TIME XX MINUTES** then **<+> OR <-> TO ADJUST**

Press + raises time 1 minute. Press − lowers time 1 minute.

Sterilization time can be adjusted from a *minimum of 3 minutes* to a *maximum of 90 minutes*. *It is important to properly coordinate the cycle time with the sterilization temperature.*

then displays: **<P> FOR NEXT <STOP> TO CANCEL** Press P

Displays: **VENT TYPE: FAST** then **<+> OR <-> TO ADJUST**

Press + changes VENT to FAST. Press − changes VENT to SLOW.

When in FAST vent, valve fully opens and vents chamber.
When in SLOW vent, valve opens periodically for a fraction of a second once per minute to slowly vent chamber.

then displays: **<P> FOR NEXT <STOP> TO CANCEL** Press P

Displays: **DRY TIME XX MINUTES** then **<+> OR <-> TO ADJUST**

Press + raises time by 1 minute. Press − lowers time by 1 minute.

Dry time can be adjusted from zero to a *maximum of 60 minutes, in 1 minute increments*.

then displays: **<P> FOR NEXT <STOP> TO CANCEL** Press P

The display shows the new programmed conditions.

Displays: **PROGRAM 1 XXX°F, XX MINUTES** then **FAST VENT XX MINUTE DRY**

NOTE
The programmed settings entered are retained under Program 1 button.
Even if power is interupted or the unit unplugged the settings will be retained.

Load articles to be sterilized into chamber.

CAUTION
All materials run in these cycles must be validated by the user.

Press START button to begin sterilization cycle for Program 1.

NOTE
After any cycle has been selected but not started, depressing the STOP button or allowing 5 minutes or more time to pass, the display will go back to **SELECT CYCLE** .

Unloading Hot Trays and Cassettes (Using Tray/Cassette Tool)

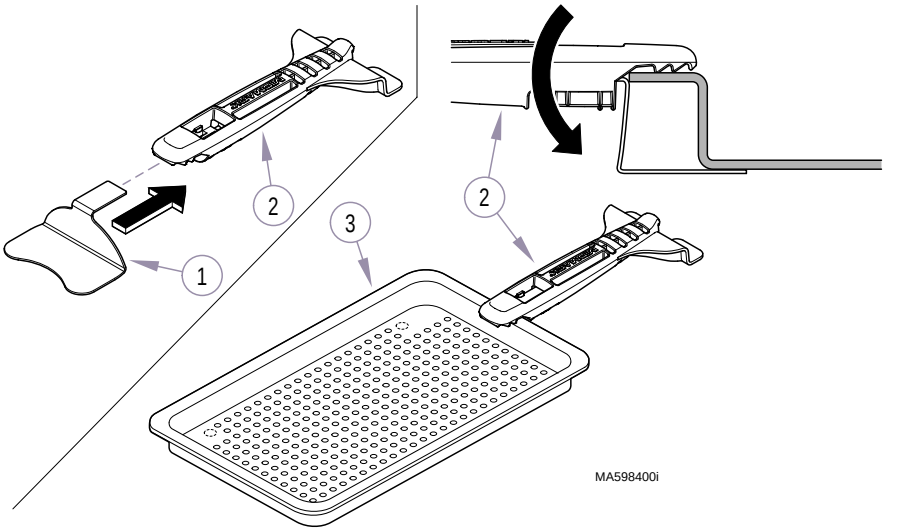
CAUTION

Only use the 9A307001 Tray / Cassette tool with Midmark manufactured trays.

Use care when removing or transporting trays, or cassettes as they may be hot.

Hold the tray level and slightly elevated to prevent it from shifting and becoming dislodged. Failure to comply may result in personal injury due to burns.

Tray Removal



Insert tray (smaller) plate (1) into end of tool (2)

Hook the top tab of the tool (2) to top center of tray lip.

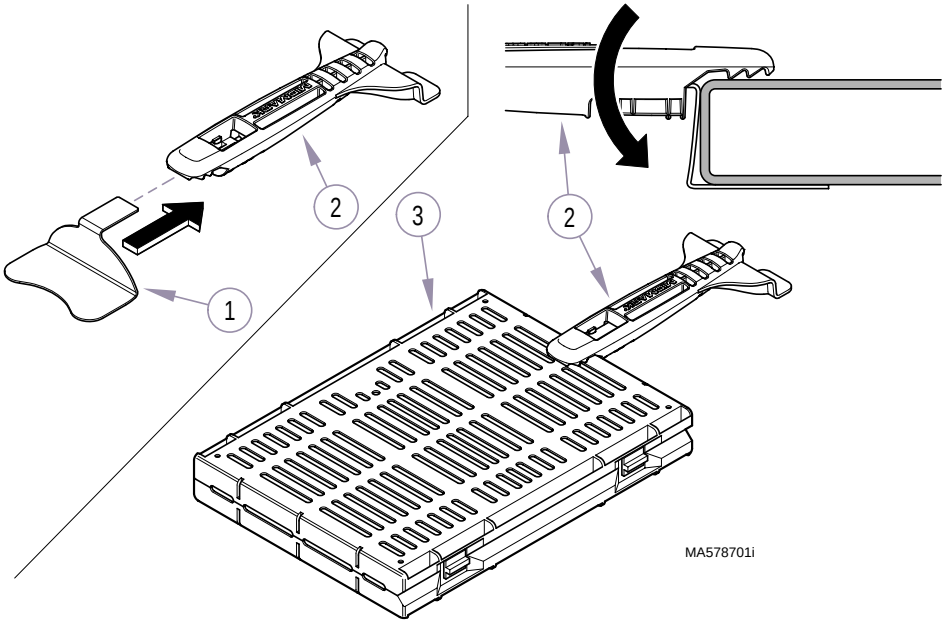
Rotate tool (2) downward until bottom forks are completely beneath tray (3).

Check to ensure tray (3) is being held securely and then remove tray from chamber.

Cassette Removal

NOTE
Cassette tool can handle cassettes up to 1 1/’2" (3.8 cm) thick

Insert cassette plate (A) (larger plate) into end of the tool.



CAUTION
When removing the cassette, hold the cassette tool so the end of the cassette is slightly elevated and use care to prevent it from sliding off the cassette tool.

Hook top, saw-toothed tab of tool to the top center of the cassette (3) while rotating tool downward until bottom plate is completely beneath the cassette.

Check to ensure the cassette is being held securely and then remove the cassette from the chamber.

List of Authorized Accessories

Listed below are the accessories which are authorized for use with these sterilizers. Unless noted, accessory can be used on the M9 and M11.

Accessory Name	Order Number
• Speedclean, 1 (16 oz. [.47 liter]) bottle	002-0396-00
• Speedclean, 1 case (12-16 oz. [.47 liter] bottles)	002-0396-01
• Speedclean, 1 case (12-32 oz. [.95 liter] bottles)	002-0396-02
• Printer Refill Kit	002-0371-00
• Rack / Cassette (Horizontal)	9A215001 ***(M11/M11D Only)***
• Rack / Cassette (Vertical)	9A215002 ***(M11/M11D Only)***
• Tray / Deep (2 1/2" [6.4 cm])	9A224001 ***(M9/M9D Only)***
• Tray / Deep (2 1/2" [6.4 cm])	9A225001 ***(M11/M11D Only)***
• Rack / Pouch	9A226001
• Printer	9A259001
• Cassette Tray (Large)	9A306001 ***(M11/M11D Only)***
• Tray / Cassette Tool	9A307001
• External Condensing Tank	9A260001

OPERATOR MAINTENANCE

User is responsible to establish a periodic maintenance procedure to assure correct operation of equipment and reliable sterilization of loads.
Contact your local Midmark distributor or service representative to develop a program for planned maintenance.

NOTE

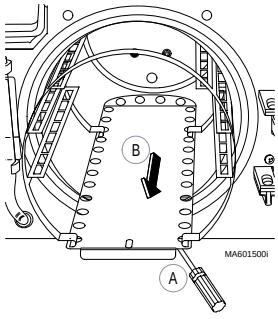
After the Sterilizer is plugged into a power source at **7, 14, and 21 days** a message will be displayed **PERFORM WEEKLY MAINTENANCE** informing the Operator that maintenance is due. **At the 28th day** a message will be displayed **PERFORM MONTHLY MAINTENANCE**. Refer to the appropriate maintenance instructions in this manual.
If power is interrupted the timer will reset initiating a new cycle of messages.

Tray Rack & Plate

WARNING

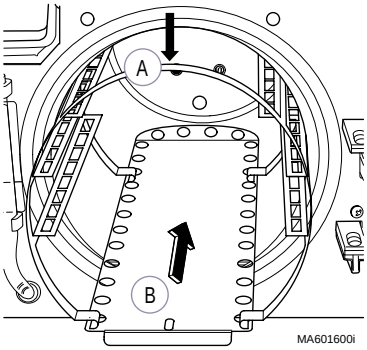
Make sure that unit is cool before attempting to remove or install tray rack and plate. Use care to prevent injury when handling metal tray rack. Do not run Sterilizer without Tray Rack in place.

1. Removal
   - After removing trays, pry upward (A) on end of tray plate with a screwdriver while pulling tray rack and plate assembly out (B) of chamber.



2. Installation

EQUIPMENT ALERT
Install tray rack and plate assembly so that angled end of plate is toward back of chamber. Do *not* allow plate to contact water lever sensor.



- Place back edge of tray in chamber. Pressing downward (A) on top of tray rack, slowly insert assembly into chamber (B).

Daily

EQUIPMENT ALERT
If the sterilizer is used frequently to process dental handpieces that have been lubricated or dipped in dental milks, drain the water from the reservoir daily. Refill the reservoir with distilled water.

1. Clean External Surfaces
   - Wipe with a soft dry cloth.
   - Wash occasionally with a damp cloth and mild soap or detergent.

WARNING
Make sure that unit is cool when cleaning door gasket and any mating surfaces to prevent being burned.

2. Clean Sterilizer Door Gasket
   - Clean door gasket sealing lip and mating surface with a damp cloth.
   - Examine gasket for possible damage.

Weekly

EQUIPMENT ALERT
Do not use abrasive or bleaching agents in chamber (i.e. steel wool, scouring powder, bleach, etc.) or wire brush. Possible damage to metal surfaces of chamber and other components could result.

1. Clean Chamber and Trays
   - Drain water from the reservoir using drain tube located on front of unit.
   - Wash inside of chamber and trays with mild soap or Speed-Clean and distilled water.
   - Refill reservoir with distilled water.

Monthly

NOTE
Do **not** process instruments while cleaning sterilizer.

1. Clean Chamber and Plumbing

   (a) Drain reservoir and fill with clean, distilled water then add one ounce of Speed Clean Sterilizer Cleaner to a cool chamber.

   (b) Clean by running one **POUCHES** cycle.

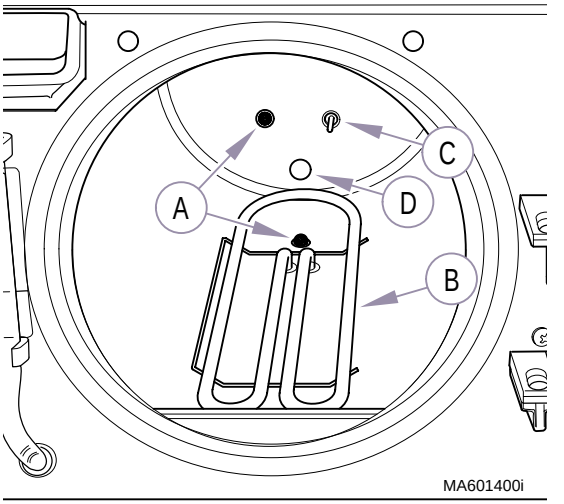
   Press **STOP** button when **Drying** portion of cycle begins.

   Drain reservoir and refill with clean, distilled water.

   Rinse by running one **UNWRAPPED** (Unwrapped) cycle.

   (d) After cycle has completed:
   Drain reservoir and allow sterilizer to cool.

NOTE
Press **STOP** button to cancel chamber pre-heat.



   (e) Remove trays and tray rack and wipe off with a damp cloth.
   Remove and clean filters (A) *(Refer to Non-Scheduled Maintenance in this booklet)*
   Wipe out the inside of chamber using care not to damage the heating element (B), steam temperature probe (C), or level sensor probe (D).

   (f) Re-install filters (A) and tray rack.

   (h) After filling the reservoir with clean distilled water, sterilizer is ready for use.

2. Perform Pressure Relief Valve Check

NOTE
Pressure Relief Valve must be checked each month to assure it functions properly.

(a) Press **UNWRAPPED**

(b) Press **START**

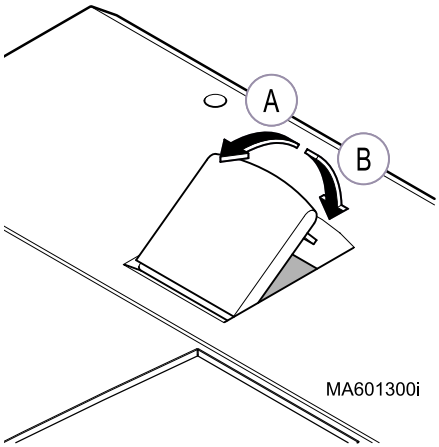
WARNING

During the pressure relief valve check, steam will be vented from under the sterilizer. To keep from being burned, place a steam barrier (a rolled up towel) around the bottom of the sterilizer.

(c) Wait until pressure in chamber reaches between 25 PSI (172 kPa) and 26 PSI (179 kPa).

Display: ***HEATING - UNWRAPPED***
XXX°F 25.5 PSI

Pull upward on the pressure relief lever (A) for approximately 3 seconds. Steam should discharge freely from beneath rear of unit.



NOTE

If pressure relief valve does not close completely when lever is released, pull upward on lever again and release it quickly so valve snaps back into position. Do this until valve seats properly.

(a) Release lever (B). Valve should close, stopping release of steam.

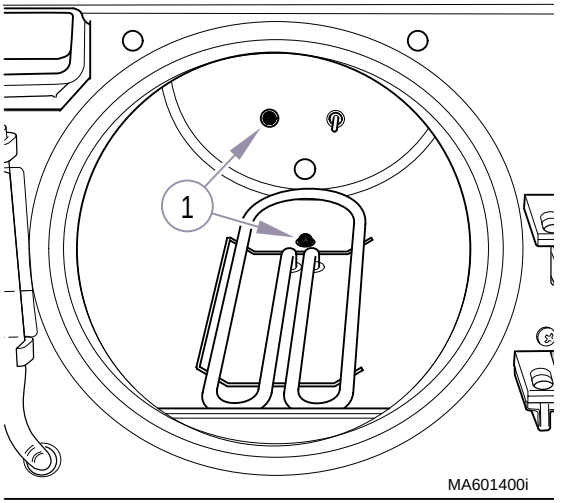
(b) Press **STOP** button to abort the cycle, <u>preventing unit from overheating.</u>

(c) If excessive force is required to open pressure relief valve or pressure relief valve will not reseat properly, the pressure relief valve must be replaced (See Calling For Service later in this manual).

Non-Scheduled Maintenance

WARNING
Always unplug unit power cord from outlet and allow unit to cool before performing maintenance. Failure to comply may result in injury.

1. Cleaning Fill / Vent and Air Filter Screens
   The filter screens (1) are intended to prevent debris from causing valve failures. The screens should be cleaned if fill or vent times become too long or items will not dry.



   (a) Unplug the power cord from outlet receptacle. Open door and remove trays.

   (b) To access Fill / Vent filter screen,remove tray rack.
   Air filter screen is located in back of chamber.

   (c) Grasp filters (1) and gently pull upward while twisting slightly (a pair of pliers may be used if filter is stuck).
   Clean filters with mild soap and distilled water. A small stiff bristled brush or ultrasonic cleaner may be helpful. Rinse filters with distilled water.

EQUIPMENT ALERT
Do *not* operate sterilizer without filters in place.

   (d) Re-install filters (1) by inserting into the hole, and pressing downward while twisting slightly.

   (e) Install tray rack.

   (f) Plug unit power cord into outlet receptacle.

Troubleshooting Guide

Use the following table to assist in correcting minor problems with the sterilizer.

TroubleShooting Guide

Problem	*Possible Cause*	*Solution*
Sterilizer does not operate (no display)	*Sterilizer power cord came loose from supply outlet or back of sterilizer.*	*Assure Sterilizer power cord is plugged into outlet and sterilizer.*
	No power at Sterilizer supply outlet	*Check circuit breaker for supply outlet. If problem recurs, unplug unit power cord and contact an authorized service technician (see Calling For Service).*
	Fuse open on main P.C. Board.	*Unplug unit power cord and contact an authorized service technician (see Calling For Service).*
Steam is escaping from pressure relief valve	*pressure relief valve not properly seated.*	*reseat pressure relief valve (see Perform Pressure Relief Valve Check under Monthly maintenance).*
Sterilization failure evidence from process monitor (chemical indicator, biological indicator, etc.)	*sterilization conditions were not present at location of the indicator.*	*reload sterilizer in accordance with Guidelines For Loading the M9/M9D or M11/M11D. If problem recurs, unplug unit power cord and contact an authorized service technician (see Calling For Service).*
	indicator is out-of-date, is inappropriate for sterilization cycle, or has otherwise malfunctioned.	*use an indicator, appropriate for the load and cycle selected, that has been stored properly. Contact the indicator manufacturer for additional information on proper selection, use, storage, and potential misapplication or malfunction.*
Door gasket leaks	*door gasket is damaged or dirty.*	*clean or replace door gasket (see Clean Door Gasket under Weekly maintenance).*
Items are not dry at end of drying portion of cycle.	*sterilizer is improperly loaded.*	*reload sterilizer in accordance with Guidelines For Loading the M9/M9D or M11/M11D. If problem recurs, unplug unit power cord and contact an authorized service technician (see Calling For Service)*
	filter screen(s) clogged. (Check Fill / Vent and Air Valve filter screens)	*clean or replace filter screen(s) (see Non-Scheduled Maintenance).*

TroubleShooting Guide - Continued

Problem	*Possible Cause*	*Solution*
Printer not printing	*Printer cable is not connected properly.*	*Ensure that printer cable is connected to printer and PC board properly.*
	Software malfunction.	*Unplug sterilizer power cord, wait 15 seconds, and then plug sterilizer power cord back in.*
	Printer is out of paper.	*Insert a new paper roll (see Inserting the Paper Roll under Printer Installation and Operation).*
	Cartridge Ribbon is dried out or needs to be replaced.	*Hold the switch in the ON / FEED position for three seconds. If this doesn't correct the problem, replace the cartridge ribbon (see Installing a New Cartridge Ribbon under Printer Installation and Operation in this manual).*

Message Guide

CAUTION

The Message Guide list some of the messages that may occur during operation, along with possible causes and solutions.

If an error occurs more than once, do not continue to use sterilizer.
Note the message or error code, unplug unit and call an authorized service representative (see "Calling For Service").

Also, if an error message contains the phrase "***Items Not Sterile***", the items in sterilizer **shall not** be considered sterile; they **must** be run through a successful sterilization cycle.

Message Guide

Message	*Possible Cause*	*Solution*
Informational Messages		
INITIALIZING SYSTEM	*Unit power cord was just plugged in - standard informational message.*	*normal operation will occur after a 4 second pause.*
TOTAL CYCLES XXXX M9*, vX.XX. (*will display Model Number, M9, M9D, M11, or MIID).	*Unit power cord was just plugged in - standard informational message.*	*normal operation will occur after this message.*

Message Guide - Continued

Message	Possible Cause	Solution
PERFORM WEEKLY MAINTENANCE	*This message is displayed every 7, 14, and 21 days after the unit is plugged into a power source to prompt the operator to perform weekly maintenance described in this manual.*	*Perform weekly maintenance. The message will automatically clear after the next cycle is completed.*
PERFORM MONTHLY MAINTENANCE	*This message is displayed every 28 days to prompt operator to perform monthly maintenance described in this manual.*	*Perform monthly maintenance. The message will automatically clear after the next cycle is completed.*
Error Messages		
C010: POWER UP MODE SYSTEM PWR LOSS ***ITEMS NOT STERILE PUSH STOP TO RESTART***	*Unit had loss of power during cycle.*	***Press STOP*** *button to restart.*
C060: POWER UP MODE SYSTEM HARDWARE	*Power was interupted briefly or an internal glitch.*	***Unplug unit power cord for 1 minute and then plug back in.*** *If problem persists, contact an authorized service representative (see Calling For Service later in this manual).*
C102: FILL MODE STOP PRESSED	***STOP*** *button was pressed during cycle.*	***Press STOP*** *button to restart.*
C103 through C105 HEATUP, STERILIZE, OR VENT MODE STOP PRESSED	***STOP*** *button was pressed during cycle.*	*Wait briefly (up to one minute) while chamber pressure / temperature dissipates.* ***Press STOP*** *button to return to Select Cycle mode where a new cycle may be initiated.*
C106: DOOR MODE STOP PRESSED	***STOP*** *button was pressed during cycle.*	***Press STOP*** *button to restart.*
C232: FILL MODE WATER LOW	*Water level in reservoir is too low.*	*Refill water reservoir with distilled or demineralized water. Wait briefly (up to one minute).* ***Press STOP*** *button to return to Select Cycle mode where a new cycle may be initiated*
	Fill / Vent filter (in bottom of chamber) clogged.	***Clean Fill / Vent filter*** *(Refer to Non-Scheduled Maintenance).*
C326: DOOR MODE DOOR CLOSED	*Door latch is still making contact after door solenoid operated.*	***Open Door***

Message Guide - Continued

Message	Possible Cause	Solution
C382 FILL DOOR OPEN	*Sterilizer detects that door switch contacts opened.*	***Close the sterilizer door.*** *(Cycle will continue where left off.)*
C383 HEATUP MODE DOOR OPEN	*Sterilizer detects that door switch contacts opened.*	*Wait briefly (1 minute) while chamber pressure / temperature dissipates.* ***Press STOP button to return to Select Cycle mode. Initiate a new cycle.***
C384 STERILIZE MODE DOOR OPEN	*Sterilizer detects that door switch contacts opened.*	***Unplug unit power cord for 1 minute and then plug back in.*** *If problem persists, contact an authorized service representative (see Calling For Service later in this manual).*
C533 through C633 STEAM TEMP LOW or STEAM TEMP HARDWARE or PRESSURE LOW	*Sterilizer detects that temperature and / or pressure is outside the limits for normal operation.*	***Unplug unit power cord for 1 minute and then plug back in.*** *If problem persists, contact an authorized service representative (see Calling For Service later in this manual).*
C642 through C647 PRESSURE HIGH	*Pressure inside chamber is outside the limits for normal operation.*	*Wait briefly (up to one minute) while chamber pressure / temperature dissipates.* ***Press STOP button to return to Select Cycle mode. Initiate a new cycle.***
C660 through C677 PRESSURE HARDWARE or PRESSURE OVERLIM	*Pressure inside chamber is outside the limits for normal operation.*	***Unplug unit power cord for 1 minute and then plug back in.*** *If problem persists, contact an authorized service representative (see Calling For Service later in this manual).*
C980 through C987 HI-LIMIT OPEN	*High Limit switch has opened for at least 1/4 second during specific operational mode.*	***Unplug unit power cord for 1 minute and then plug back in.*** *If problem persists, contact an authorized service representative (see Calling For Service later in this manual).*

CALLING FOR SERVICE

NOTE
Please mark down any displayed Code(s) and be sure to relay this information to the Service Technician.

Contact your **Midmark Authorized Dealer**, or log onto **www.midmark.com** [Customer Relations / Locate Your Service Provider].
Model and serial number information will be required when calling for service. To contact Midmark directly:

1-800-Midmark (1-800-643-6275) or 937-526-3662
8:00 a.m. until 6:00 p.m. Monday through Thursday &
8:00 a.m. until 5:00 p.m. Friday (Eastern Standard Time in the U.S.) *[excluding standard U.S. holidays]*.

SPECIFICATIONS

M9/M9D Sterilizer

Physical Dimensions:

Overall Length w/Plug	20.125 in. (51 cm)
Overall Width	15.3 in. (38.9 cm)
Overall Height w/Printer	15.8 in. (40.1 cm)
Counter Area	15.3 in. x 20.375in. (38.9 cm x 51.8 cm)
Chamber	9.0 in. diam. x 15.0 in. deep (22.9 cm x 38.0 cm)
Standard Trays	Large: 7 5/16 in. x 12 in. x 7/8 in. (18.6 cm x 30.5 cm x 2.2 cm)
	Small: 5 5/8 in. x 12 in. x 7/8 in. (14.3 cm x 30.5 cm x 2.2 cm)

Weight:

Empty Reservoir	73 lbs (33.1 Kgs)
With Shipping Carton	81 lbs (36.7 Kgs)
Water Reservoir Capacity	1.1 Gallons (4.1 liters) to Full Mark usable volume is 0.5 gallons (1.9 liters)

Electrical Requirements:
NOTE: A separate (dedicated) circuit is required for this sterilizer. Sterilizer should not be connected into an electrical circuit with other appliances or equipment unless circuit is rated for the additional load.

115 VAC, 50/60 Hz Model	15 AMP Circuit, Single Phase (1425 Watts)
230 VAC, 50/60 Hz Model	10 AMP Circuit, Single Phase (1500 Watts)

Fuse Ratings

115 VAC Unit

F1 .....0.25 Amp, 250 V, Slo-blo, 1/4" x 1 1/4"

F2.....15 Amp, 250 V, Fast Acting, 1/4" x 1 1/4"

230 VAC Unit

F1.....0.125 Amp, 250 V, Slo-blo, 5 x 20 mm

F2.....8 Amp, 250 V, Fast Acting, 5 x 20 mm

Chamber Pressure at 270°F (132°C) .....27.1 psi. (186.2 kPa)

Safety Valve Setting .....40 psi. (275.8 kPa)

Certifications .....ASME Boiler & Pressure Vessel Code, Section VIII, Division1.

UL61010A-1 c UL us LISTED LABORATORY EQUIPMENT 59FM

CLASSIFIED c UL us

Medical Equipment
UL61010A-1
UL61010A-2-041
59FM
Midmark Corporation

This product has been evaluated with respect to electrical shock, fire & mechanical hazards only, in accordance with UL61010A-1, UL61010-2-041, CAN/CSA C22.2 NO. 1010 and CAN/CSA C22.2 NO. 1010.2-041-96.

M11/M11D Sterilizer

Physical Dimensions:

Overall Length w/Plug .....22.8 in. (57.9 cm)

Overall Width.....17.8 in. (45.2 cm)

Overall Height w/Printer .....17.8 in. (45.2 cm)

Counter Area.....17.8 in. x 20.7 in. (45.2 cm x 52.6 cm)

Chamber.....11.0 in. diam. x 18 in. deep (28 cm diam. x 46 cm deep)

Standard Trays ..... Large: 9 in. x 15 in. x 1 1/8 in. (22.9 cm x 38 cm x 2.9 cm)

Small: 6 5/8 in. x 15 in. x 1 1/8 in. (14.3 cm x 38 cm x 2.9 cm)

Weight:

Empty Reservoir.....99.0 lbs (44.9 Kgs)

With Shipping Carton .....131.0 lbs (59.4 Kgs)

Water Reservoir Capacity .....Approximately 1.4 Gallons (5.3 liters) to Full Mark
usable volume is 1.0 gallons (3.8 liters)

Electrical Requirements:

NOTE: A separate (dedicated) circuit is required for this sterilizer. The sterilizer should not be connected into an electrical circuit with other appliances or equipment unless the circuit is rated for the additional load.

115 VAC, 50/60 Hz Model ..... 15 AMP Circuit, Single Phase (1425 Watts)

230 VAC, 50/60 Hz Model ..... 10 AMP Circuit, Single Phase (1500 Watts)

Fuse Ratings

115 VAC Unit

F1 ..... 0.25 Amp, 250 V, Slo-blo, 1/4" x 1 1/4"

F2 ..... 15 Amp, 250 V, Fast Acting, 1/4" x 1 1/4"

230 VAC Unit

F1 ..... 0.125 Amp, 250 V, Slo-blo, 5 x 20 mm

F2..... 8 Amp, 250 V, Fast Acting, 5 x 20 mm

Chamber Pressure at 270°F (132°C) ..... 27.1 psi. (186.2 kPa)

Safety Valve Setting ..... 40 psi. (275.8 kPa)

Certifications ..... ASME Boiler & Pressure Vessel Code, Section VIII, Division1

UL61010A-1 c UL us LISTED LABORATORY EQUIPMENT 59FM

CLASSIFIED c UL us

Medical Equipment
UL61010A-1
UL61010A-2-041
59FM
Midmark Corporation

This product has been evaluated with respect to electrical shock, fire & mechanical hazards only, in accordance with UL61010A-1, UL61010-2-041, CAN/CSA C22.2 NO. 1010 and CAN/CSA C22.2 NO. 1010.2-041-96.

PRINTER INSTALLATION AND OPERATION

The printer is an optional add-on that some units may have. The printer may also be purchased as an accessory at a later date and installed.

Installing the Printer

WARNING
Disconnect all electrical power to the unit before removing any of the unit's covers/ shrouds or making any repairs to prevent possibility of electrical shock. Failure to comply with these instructions could result in serious personal injury.

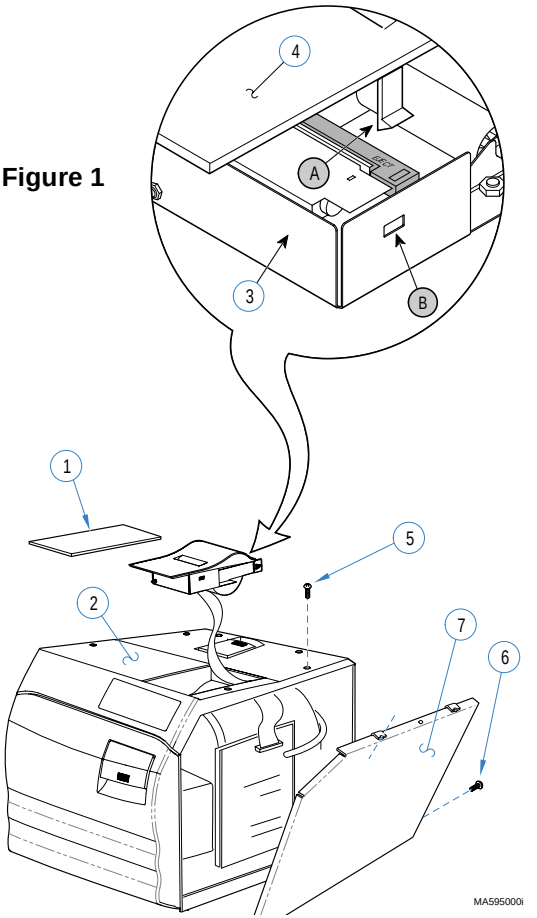
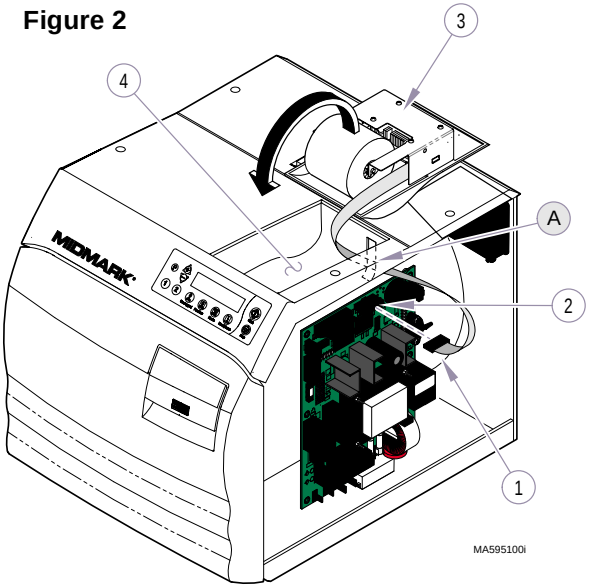


Figure 1

1. Unplug sterilizer power cord from electrical outlet.
2. Using a flat bladed screwdriver, carefully pry existing printer cover plate (1, Fig. 1) from top cover (2) and discard *(cover plate is held in place with double sided tape)*.
3. If not already assembled, attach printer assembly (3) to printer housing (4) by inserting two locking tabs (A) into locking slots (B). Set printer assembly aside.
4. Remove two screws (5) and one screw (6) securing right hand side panel (7).
5. Pull outward and down on top edge of right hand side panel (7) and remove right hand side panel from sterilizer.

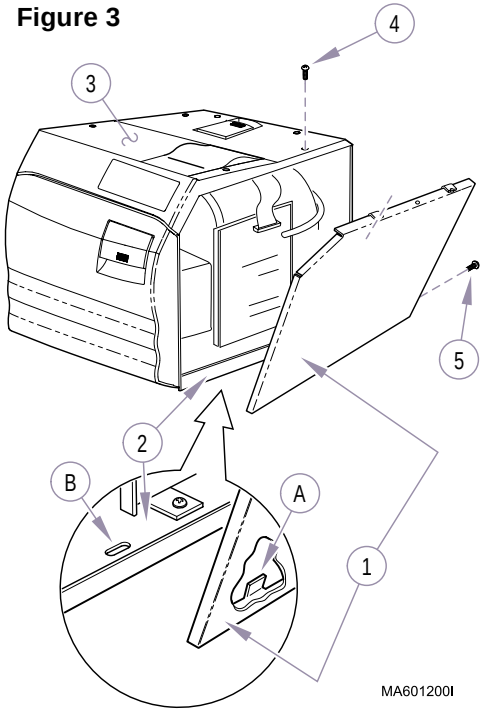
6. Route loose end of PCB printer harness (1, Figure 2) through slot (A) in printer cavity (4) of top cover.
7. Plug PCB printer harness (1) into printer terminal (2) of PC Board.
8. Position printer assembly (3) in printer cavity (4).
9. Insert two tabs (A, Figure 3) of right hand side panel (1) into slots (B) in base (2).

Figure 2



10. Raise top edge of right hand side panel (1) into position under top cover (3) and secure using two screws (4) and one screw (5). Make sure back lip of right hand side panel is on outside of back panel; not on inside.
11. Plug sterilizer power cord into electrical outlet.
12. Insert a paper roll if necessary (see Inserting Paper Roll later in this manual).

Figure 3

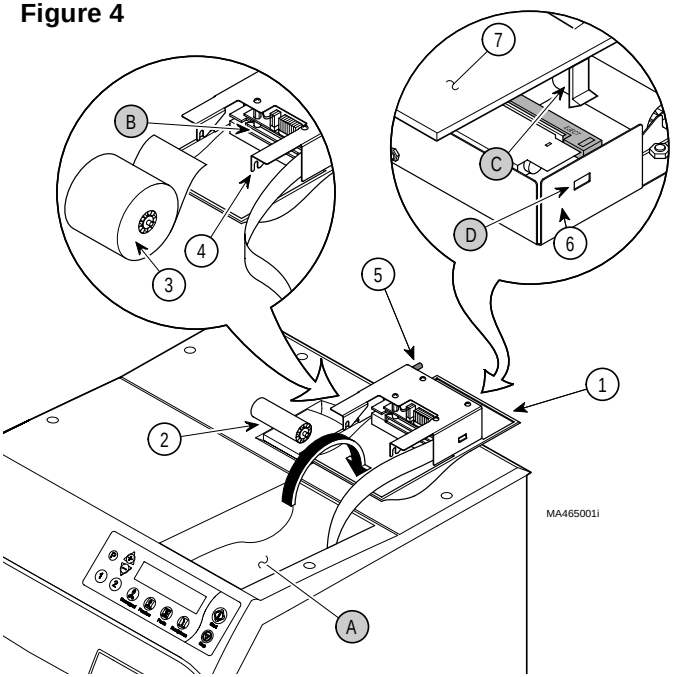


Operating the Printer

When the sterilizer is plugged in, the printer is automatically powered up and initialized; no user intervention / setup is required.

Inserting the Paper Roll

Figure 4



1. Remove the printer assembly (1,Fig. 4) from the printer cavity (A) and turn it onto its back.
2. Remove paper spindle (2) from used paper roll and insert it in new paper roll (3).
3. Unroll 2 to 3 in.(5 to 7.5 cm) of paper (3).
4. Cut a straight edge on the paper (3) if it is torn or jagged; this will facilitate the entry of paper into the printer.
5. Slide the paper (3) into the slot (B) on the back of the printer; it will slide in 1/4 in. (6.4 mm) before it stops.

NOTE
If paper (3) does not feed out of top of printer by itself, remove printer assembly (6) from printer housing (7) by pulling two locking tabs (C) from locking slots (D). Feed paper through paper slot in printer housing (7) by hand and then re-attach printer assembly (6) to printer housing (7) by inserting two locking tabs (C) into locking slots (D).

6. While holding the paper (3) in place, press the PAPER FEED button (5) and hold. The printer will activate and a rubber roller will pull the paper into the printer compartment. Continue to hold the PAPER FEED button down until the paper emerges from the top of the printer mechanism. Then, when 1 in. (2.5 cm) of paper has emerged from the top of the printer, release the PAPER FEED button.
7. Pull the paper (3) through the printer until 2 to 3 in. (5 to 7.5 cm) of paper is exposed.

8. Install the paper roll (3) by inserting the ends of the paper spindle (2) in slots of spindle holders (4).
9. Turn the paper roll so as to take up the slack in the paper feeding to the printer. Make sure the roll of paper turns freely. If it does not turn freely, the paper will jam and possibly damage the printer mechanism.
10. Install the printer assembly (1) back into the printer cavity (A).

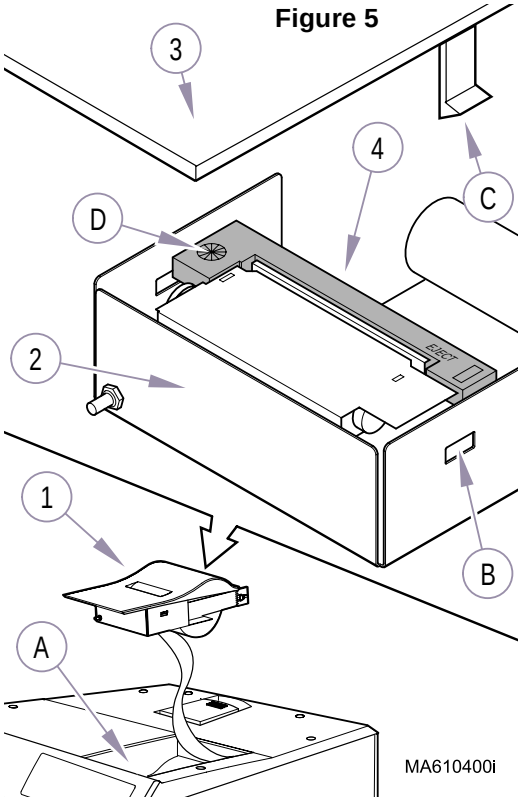
About the Cartridge Ribbon

The printer takes a cartridge ribbon. If the printed material is difficult to read and you suspect a dried out ribbon is the cause of the problem, advance to a properly inked portion of the ribbon by pressing the PAPER FEED button for three seconds. When printing becomes faint or difficult to see and pressing the PAPER FEED button for three seconds does not correct the problem, you should replace the cartridge (see Installing a New Cartridge Ribbon later in this manual).

Installing a New Cartridge Ribbon

1. Unplug the sterilizer power cord from electrical outlet.
2. Remove the printer assembly (1,Figure 5) from the printer cavity (A).
3. Separate the printer (2) from the cover (3) by slightly bending the housing (B) to release the locking tabs (C)
4. Push down on side of printer cartridge (4) marked EJECT and remove the old ribbon cartridge.
5. When installing the new cartridge be sure the ribbon is inserted in front of the paper and flat against the paper. Press the ribbon cartridge (4) downward until it snaps into place.
6. Turn the knob (D) on the ribbon cartridge clockwise until ribbon is tight.

Figure 5



7. Re-attach cover (3) to printer (2) by inserting locking tabs (C) into slots of housing (B).
8. Place printer assembly (1) in cavity (A).
9. Plug sterilizer power cord into electrical outlet.

Removing the Paper Roll

EQUIPMENT ALERT

Be sure to pull the paper out of the top of the printer. Pulling the paper out of the back of the printer will damage the printer mechanism.

Before removing the paper roll, advance the paper about 1 in. (2.5 cm) by pressing down and holding the PAPER FEED button. Lift the paper roll away from the printer housing, and with a scissors, cut the paper roll feeding to the printer. Try to make the cut as straight as possible to facilitate the next reloading of the paper. Now, pull the remaining paper through the printer mechanism.

Power Up Message

When the printer successfully initializes after the sterilizer is powered up, it prints the word READY to assure the operator that its built in microprocessor is working properly and the sterilization cycles will be recorded by the printer.

Printer Tape Description

The printer will print the following information for each program cycle:

Cycle Type

Set Temperature

Set Time

Run Number

Date: Lines are printed for the month, day, and year so that the date can be recorded on the printer tape.

The printer will print the chamber temperature, the chamber pressure, and the time elapsed in two (2) minute increments during the heat up phase.

During the actual Sterilization Phase of the program cycle, the printer will record the chamber temperature, chamber pressure, and the time elapsed for each 1/2 minute of the program cycle.

When the sterilizer has completed the Sterilization Phase of the program cycle, the printer will print the word VENTING CHAMBER to show that the steam pressure is being exhausted from the chamber.

When the sterilizer has completed the Drying Phase of the program cycle, the

word COMPLETE will be printed to show that the sterilizer has completed the sterilization program cycle.

The figure below shows an example of a typical printout of a program cycle:

Typical Printout of a Program Cycle

```
BEGIN

UNWRAPPED
270  degF  3:00 MINUTES

MM - DD - YYYY
_ _ - _ _ - _ _ _ _
TOTAL CYCLES    123

HEATING-UNWRAPPED

MM:SS     degF      PSI
0:00      224       0.0
2:00      236       10.8


STERILIZING
3:30      271       28.2
3:00      273       29.1
2:30      273       29.0


MIN TEMP            271
MAX TEMP            274
MIN PRESS           28.2
MAX PRESS           29.5

VENTING CHAMBER

DRYING
30:00
15:00
10:00
5:00
0:00

TOTAL PROCESS TIME
  0:20:56
COMPLETE
```

LIMITED WARRANTY

SCOPE OF WARRANTY

Midmark Corporation ("Midmark") warrants to the original purchaser its new Alternate Care products and components (except for components not warranted under "Exclusions") manufactured by Midmark to be free from defects in material and workmanship under normal use and service. Midmark's obligation under this warranty is limited to the repair or replacement, at Midmark's option, of the parts or the products the defects of which are reported to Midmark within the applicable warranty period and which, upon examination by Midmark, prove to be defective.

APPLICABLE WARRANTY PERIOD

The applicable warranty period, measured from the date of delivery to the original user, shall be one (1) year for all warranted products and components.

EXCLUSIONS

This warranty does not cover and Midmark shall not be liable for the following: (1) repairs and replacements because of misuse, abuse, negligence, alteration, accident, freight damage, or tampering; (2) products which are not installed, used, and properly cleaned as required in the Midmark "Installation" and or "Installation / Operation Manual for this applicable product. (3) products considered to be of a consumable nature; (4) accessories or parts not manufactured by Midmark; (5) charges by anyone for adjustments, repairs, replacement parts, installation, or other work performed upon or in connection with such products which is not expressly authorized in writing in advance by Midmark.

EXCLUSIVE REMEDY

Midmark's only obligation under this warranty is the repair or replacement of defective parts. Midmark shall not be liable for any direct, special, indirect, incidental, exemplary, or consequential damages or delay, including, but not limited to, damages for loss of profits or loss of use.

NO AUTHORIZATION

No person or firm is authorized to create for Midmark any other obligation or liability in connection with the products.

THIS WARRANTY IS MIDMARK'S ONLY WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. MIDMARK MAKES NO IMPLIED WARRANTIES OF ANY KIND INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS.

SF-1487 REV. A1

Return To Table Of Contents

Notes:

Return To Table Of Contents

Notes:

Return To Table Of Contents

Notes:

To reorder informational materials for this unit, use the following part numbers:
User Training CD: **004-0410-00** Paper I/O Manual: **003-1249-00**

Return To Table Of Contents

Midmark Corporation
60 Vista Drive
P.O. Box 286
Versailles, Ohio 45380-0286
937-526-3662
Fax 937-526-5542
midmark.com

MIDMARK®

Because we care.

003-1249-00 Rev. C (10/03)